

Junior Ranger Workbook

Sunset Crater Volcano National Monument
U.S. Department of the Interior



Welcome to Sunset Crater Volcano National Monument. The National Park Service takes care of almost 400 national parks, monuments, recreation areas, battlefields, and historic sites. That's a lot of unique places to take care of! Park rangers have a special mission to follow:

"To conserve the scenery, the natural and historical objects, and the wildlife . . . [and] leave them unimpaired for the enjoyment of future generations."

To Become a Junior Ranger

- ❖ Complete five or more pages in this booklet. (The next 2 pages should be done at the visitor center. Do *"Lookin' at Lava"* at the Lava Flow Trail. The other pages can be done anywhere.)
- ❖ Bring your finished booklet to the visitor center at Sunset Crater Volcano or Wupatki and ask a ranger to check your answers.



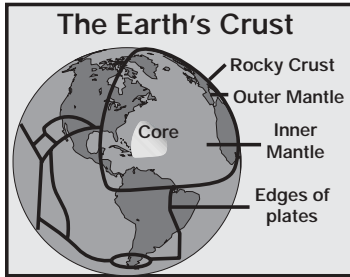
Monitoring Our Living Earth

In the visitor center, find the map called “Where Volcanoes Occur.”

Where are most of the triangles located? _____

Why do you think there are volcanoes in those locations? _____

The Great Earth Puzzle



Earthquakes happen all the time — more than 500,000 worldwide each year. Most are so small we don't even feel them. The ones people feel can make things move, fall, and break. A very large earthquake can topple buildings and cause great damage. Not all earthquakes happen near volcanos, but sometimes they do.

Can you find another map nearby that shows where and when earthquakes have occurred?
(*HINT: Check the monitors*)

Write down one place that had an earthquake today: _____

Where did an earthquake happen yesterday? _____

Why do you think most of the earthquakes on this map are pink circles? _____

Do you think scientists will someday be able to predict earthquakes and volcanic eruptions? _____

A Place of Cultural Importance

People have always tried to explain things like volcanoes and earthquakes. American Indian tribes in the Southwest had their own stories to explain how Sunset Crater Volcano came to be. Some of these stories are still told today.

Find the visitor center exhibit where you can hear tribal stories — first in their language, then in English. Which story do you like best? Why? _____



Legend Has It

Nearly 1,000 years ago, people were living and farming here. Then earthquakes began, rumbling the earth under their feet for months before the volcano erupted. This natural warning system of the earth gave the people enough time to gather their things and move to safer places.

Pretend that you are a farmer living here 1,000 years ago. Write a story of your own or draw a picture to explain why the earth is shaking under your feet.

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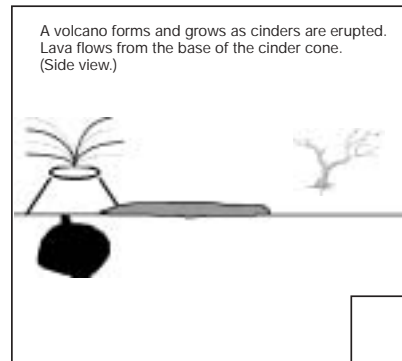
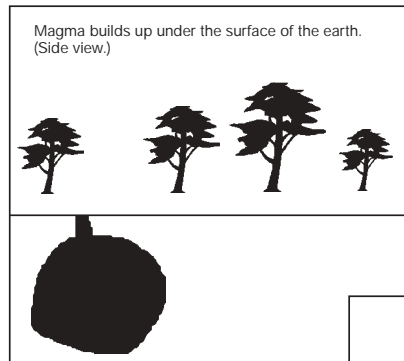
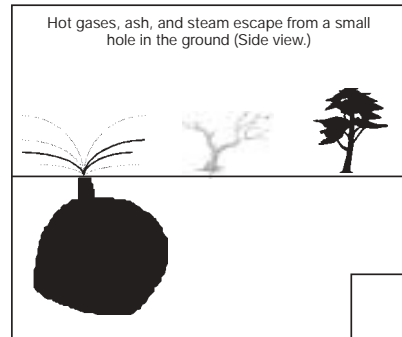
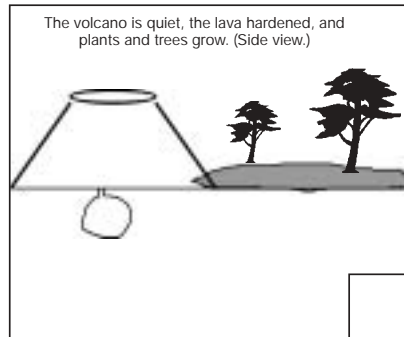
Excellent Eruptions

All of the mountains you see around you are old volcanoes that will never erupt again. Sunset Crater Volcano is the youngest volcano here, but a new volcano will probably appear sometime in the future.

Sunset Crater is called a cinder cone volcano, because it is built entirely of cinders. Lava also flowed out from the base of the volcano. The ground around it is covered everywhere with either lava or cinders.

Explorer and geologist John Wesley Powell thought that the cinders at the top of the volcano resembled a brilliant sunset. This led to the name Sunset Crater. What do the volcano's colors make you think of?

Number the pictures below in order from first (1) to last (4) based on how you think the volcano erupted.



LOOKin' at the Lava

Here's a list of things you can see as you walk on the Lava Flow Trail through the Bonito Lava Flow. Each time you find one of the features on the list below, color in the star next to it.



SUNSET CRATER VOLCANO:

This cinder cone volcano looks different from all the other volcanoes in the area. It is the only one with "sunset" colored cinders at the top.



SAN FRANCISCO MOUNTAIN:

"The Peaks" are the tallest mountain in Arizona.

This volcano erupted explosively two million years ago.



AA LAVA: (Pronounced "AH-AH")

This kind of lava has a rough broken surface. If you fell while walking on the aa lava, you would probably yell "Ah-Ah that hurt!"



PAHOEHOE LAVA:

(Pronounced "PA-HOY-HOY")

The shape of pahoehoe lava is very different from aa lava. It is smoother than aa lava and looks like rope.



XENOLITH:

(Pronounced "ZEE-NO-LITH")

A piece of white rock (limestone) surrounded by black rock (lava). Xenoliths can be as small as your fist or as big as you are



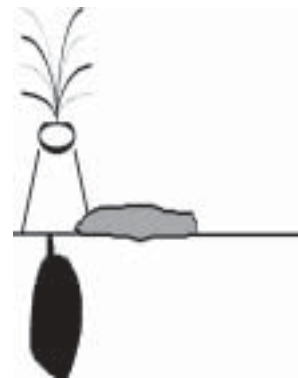
SQUEEZE-UP:

A place where lava was "squeezed up" through weak spots in the lava shell above. Think of a handful of mud squeezed up through your fingers.



ICE CAVE:

Because this cave is cold and dark, it has ice in it year round. Visitors are not allowed inside because the roof fell in and the cave is no longer safe.



Making a Difference

Read over the two activities listed below and choose one to complete.



1 Ranger Interview

Park Rangers do a variety of jobs to help protect the national parks and their visitors. Go up to a park ranger or volunteer and ask them three questions about their job.

Ranger's Name _____

Question 1: _____

Answer: _____

Question 2: _____

Answer: _____

Question 3: _____

Answer: _____

2 A Picture Is Worth a Thousand Words



Pictures often have a bigger effect than spoken words. Ask a ranger at the visitor center desk for a piece of paper and crayons. Create a sign to explain to other visitors why they should remember to leave all rocks, animals, plants, flowers, and trees in the park for future visitors to learn from and enjoy. Your sign can be a drawn picture, a written paragraph, poem, story, or a combination of words and pictures. Your sign may be put on display in the visitor center for future visitors to learn from.

Sunset Search

Keep your eyes open for the animals, plants, and landmarks listed below. They are all important parts of life at Sunset Crater. When you spot one, draw it in the corresponding box. If you don't know what one of the objects is, ask a ranger. Your search is successful when you get four in a row — either down, across, or diagonally. You don't need to stop with four in a row. Try to find them all!

Miniature volcano	Steller's jay <i>(a large blue bird)</i>	Flower	Seismograph
Abert's squirrel <i>(Has large pointy ears)</i>	Red cinders	Lava flow	Cinder cone volcano
Ponderosa pine tree	Lichen	Animal tracks	Plant with thorns
Pine cone 	Park Ranger	Painted Desert	Quaking aspen tree

REMEMBER: All the plants, animals, and rocks are protected in national parks. It's OK to look and draw, but please don't disturb the animals or take things home with you.

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Congratulations, and welcome aboard!

As a Junior Ranger I promise to help protect our parks by leaving everything in its place.



Park Ranger

My Signature